

The New Comet.

The comet discovered by M. Quénisset at Juvisy Observatory, in France, about 9^h p.m. July 9, was independently discovered by Mr. Herbert Filmer on the same night at 11^h p.m. at Faversham, Kent. Mr. Filmer announced his discovery by letter to the Editor of the "English Mechanic," on July 11 (*see* "English Mechanic" for July 14, p. 469). He there stated that the comet was situated midway between Ursa Major and Gemini, and, being inexperienced in astronomy, supposed it might be Finlay's Comet, which is not visible, as the new comet was, to the naked eye. In reply to some questions which I have addressed to him, Mr. H. Filmer informs me that he first saw the comet with the naked eye about 11^h p.m., and after arriving at home examined it with a telescope having an object-glass of 3 inches aperture. The comet had a very bright head, and the tail was brighter than the afterglow upon which it was projected. The tail was about 15° in length. Mr. Filmer's sketch shows a double curved aigrette proceeding from the nucleus, thus $\mathcal{M}$, and the outer arcs of the aigrettes are prolonged in parallel lines to form the boundaries of the tail. The fainter head of the comet, which would be in advance of the aigrettes, seems to have escaped his notice. From his description, the head was uppermost and the tail directed to the north-east. I have calculated the place of Quénisset's Comet for July 9, 11^h p.m., as visible at Faversham, and I find it would have an altitude of very nearly 12 degrees, and would be about 16 degrees 13 minutes east of the north point of the horizon. Men of Kent may congratulate Mr. Filmer on his fortunate discovery. M. Quénisset has the priority of two hours only, notwithstanding the fact that he is an astronomer of much greater experience than Mr. Filmer. I see by "The Echo" of July 21, that Mr. W. T. Lynn reports this comet to have been seen by Mr. Rordame at Utah, U.S.A., on July 8.

ALEX. FREEMAN.

Murston Rectory, Kent,
July 22, 1893.

Notes.

LIVERPOOL ASTRONOMICAL SOCIETY.—There are indications that this Society, once so vigorous, may ere long be again in active operation. During the past winter a public meeting of the Society was held, at which Mr. W. E. Plummer, M.A., Director of the Liverpool Observatory, Bidston Hill, gave a most instructive address on the progress of astronomy and its leading events in 1892. The Rylands telescope has been placed in an observatory erected by the Corporation of Liverpool in the yard of the New Mare School, of which Mr. James Gill, F.R.A.S., is President, and we understand that at a meeting recently held, the final arrangements were agreed to, by which this telescope is put into the hands of four trustees for the use of the Society, with liberty, under

certain conditions, for Mr. Gill to employ it in training his classes. We look hopefully forward to this Society being reorganised under capable management, and doing good work for astronomy on the banks of the Mersey.

ASTRONOMICAL SOCIETY AT CHESTER.—We have already briefly referred to the existence of an Astronomical Society at Chester. ("Journal," Vol., III., p. 44.) This Society owed its origin to two active and enthusiastic members of our Association, the Rev. J. Cairns Mitchell, B.D., F.R.A.S., and Mr. Fred Longbottom, who had called a public meeting in order to organise an Astronomical Society. A deputation from the Chester Society of Natural Science and Literature, (founded by the late Rev. Charles Kingsley,) attended on the occasion with a unanimous request from the Committee of management that the contemplated Society be formed as a branch of their Institution. This was accordingly agreed upon, and the proposed Astronomical Society of Chester became a branch of the Society of Natural Science and Literature, and has held its meetings during the past spring in the Lecture Theatre of the Grosvenor Museum, the Rev. J. C. Mitchell being permanent Chairman. Lectures were delivered during the session by Dr. Dobie, Mr. Longbottom, and the Chairman, Mr. R. C. Johnstone, of Liverpool, and Mr. Plummer, the Director of the Liverpool Observatory, Bidston Hill. The least attendance at any of the meetings was about sixty; nearly a dozen instruments are at work, from an 18½-inch Calver reflector to a 4½-inch refractor. An excursion to Bidston Hill in June, when the observatory and lighthouse were thrown open to the members, and the various instruments and apparatus shown and explained. Much interest has been awakened. Arrangements for lectures and observing work for the coming season are now being made, and a successful session is confidently anticipated.

ASTRONOMY IN THE ISLE OF MAN.—It may not be known to many of our Members that under the auspices of Mr. Keig, F.R.A.S., Prospect House, Douglas, there is a most admirable local society, and much effective work is done. It was originally a branch of the Liverpool Astronomical Society, but notwithstanding the collapse of the parent society, by which it was orphaned, has lived and thrived, and is now in a most healthy and hearty condition.

Do any of our Members know of other local societies that have not been referred to in our pages?

WOMEN AS MEMBERS OF SCIENTIFIC SOCIETIES:—About a year ago we had occasion to record, under the above heading, that the Council of the Royal Geographical Society had resolved to admit women to the Fellowship. The action of the Council, however, has been called in question, and after a long controversy the matter has, for the time being at least, decided against the ladies.

The first step in the dispute was taken by the Council who elected certain ladies who *prima facie* were worthy of that distinction, but unfortunately it was said that this action was *ultra vires* unless an alteration were made in the byelaws. Eminent

Queen's counsel had pronounced both for and against the validity of the elections, and some warm correspondence followed. At the Annual Meeting, 29th May last, an attempt was made to reject the Council's report; it was supported by 144 votes, but the report was adopted by 237 votes; and at the close of the proceedings, the Earl of Mayo moved, "That the Council be requested to elect "more ladies as Fellows." After much discussion the resolution was withdrawn on the understanding that a special meeting should be convened to settle the question. By way of preparation for the meeting, the whole body of Fellows was addressed, and a return post card supplied, upon which each Fellow was requested to furnish his views on the subject, "Yes" or "No."

The meeting was held on the 3rd instant, when it was announced that 1,169 votes had been received in favour of the admission of ladies, and 466 against the innovation; of the affirmative votes, 55 were subject to qualification, and of the negative 45. The Earl of Mayo moved the admission of ladies. Mr. William Hicks moved an amendment that it was inexpedient. Sir Richard Webster was opposed to change, as was also Mr. G. N. Curzon, M.P.

The voting was as follows :—For, 158; against, 172. So, although the great majority of the Society appear to be in favour of their admission, the ladies must wait a little longer before they can write F.R.G.S. after their names.

THE AMERICAN PHILOSOPHICAL SOCIETY.—This body has recently celebrated its 150th anniversary at Philadelphia. Amongst the visitors who attended the celebration was Dr. Isaac Roberts, F.R.S., who acted as delegate of the Royal Astronomical Society. Dr. Roberts contributed a paper to the proceedings on the "Progress made during recent years in Astronomical Science," illustrated by a number of the beautiful and important photographs of nebulae and star clusters, for which he has earned so deservedly high a reputation.

THE ROYAL OBSERVATORY, GREENWICH.—The chief subject of remarks at the Annual Visitation of the Royal Observatory on June 3, and the first point insisted upon in the Astronomer Royal's Report, was the insufficiency of the accommodation for the staff and the instruments. The Observatory has overgrown its domain, and over-crowding, beyond the line of mere inconvenience, and amounting in some directions to a serious crippling of efficiency, is a most obvious feature. The large new building in the south ground has been designed to relieve this pressure, and the central octagon has been completed as far as the first floor; the south wing has been commenced, and the erection of the north wing and the completion of the central octagon have been sanctioned by the Admiralty. Probably it will be found necessary ere long still further to widen the borders of the Observatory, and the Astronomer Royal concludes his report with a significant hint as to the desirability of establishing an auxiliary magnetic station outside the present Observatory grounds.

The centre of attraction on Visitation Day was undoubtedly the new dome on the S.E. tower, and the telescope now in course of

erection under its shelter. The tube of the latter was already in place, but the object glass has not yet been mounted.

The number of observations secured with the transit circle has been unprecedentedly high, due in part to the long period of fine weather during the past spring. The work of the Photographic Survey has been pushed on, 176 fields having been photographed for the chart, and 299 for the catalogue, or 475 in all, of which 443 were taken during the year to which the Report refers. The increase in the solar activity has been most remarkable, the two years 1891 and 1892 being almost equal to the three years, 1882-4, of the last maximum, as to the number of sun-spots and faculæ measured. In every way therefore the regular work of the Observatory has been most unusually heavy, but in addition to this the longitude of Montreal has been determined, and that of Paris redetermined, and a new department has been added to the programme of the Observatory, viz., the observation of double stars. Printing and publishing have indeed fallen a little below the standard of promptness traditional to Greenwich, but the arrears are rapidly being overtaken.

THE ROYAL OBSERVATORY, EDINBURGH.—The third annual report of Dr. Copeland, the Astronomer-Royal for Scotland, states that considerable progress in the erection of the actual building of the new Observatory can now be reported. The contract for the construction of the Observatory and dwelling-houses was signed on May 25th, 1892, the work being undertaken by Messrs. W. & J. Kirkwood, of Edinburgh. As the most convenient way of gaining access to the somewhat elevated site, the contractors began by constructing an inclined railway of standard guage from the east end of the Observatory grounds to a temporary siding at Blackford Hill Station, on the Edinburgh Suburban and South Side Junction Railway. The inclined railway, the siding, and the stationary hauling engine were ready for use by the end of last August. The excavation of the rock for various parts of the foundation was commenced on the 11th July, and eventually the first stone was laid on the concrete bedding on the 4th October. In spite of a somewhat inclement winter, the progress during the succeeding half year has been very satisfactory. All the buildings—that is to say, the Observatory, the transit house, the dwelling houses, and the lodge—have been brought up to the level of the ground floor. At the end of March 1893 the expenditure on the buildings amounted to 5,591*l.*, exclusive of about 1,000*l.* laid out on the drainage, fencing, water pipes, and pumping chamber. Three steam cranes at the Observatory, and another at the railway siding, expedite the work in a marked degree. The contracts for the domes, or rather drums, which will eventually surmount the eastern and western towers, will probably be let in a few days. The domes will thus be ready for erection by the time the masonry of the towers is completed. Owing to the exposed nature of the site, the domes have been specially designed to resist the most violent gales; while they can be partially opened to permit of the efficient and safe use of the instruments in the windy or showery weather so often associated with a partially clear sky in Scotland. The foundations

of the piers for the transit circle are finished, and already capped by the large granite slab, weighing nearly four tons, which has been brought from Dunecht. The various sections of the hewn granite piers are ready to be adjusted in position. The work of separating these blocks at Dunecht called for the greatest care and patience, as they had been bedded in cement in the most solid manner, and this hard cement had to be slowly removed from the joints at the angles by means of iron blades fed with emery and water. Eventually, however, all the stones were separated, and packed without accident. The successful accomplishment of this task was mainly due to the aid of Mr. John Smith, who erected the piers at Dunecht more than 20 years ago; and it is gratifying to state that the same skilful hands are at present engaged in rebuilding the piers in their new position. The foundations of the large collimators are ready to receive the capping stones. The collimators will, as at Dunecht, be mutually visible through the pierced cube of the transit circle, but in addition the slope of the ground to the south is sufficient to permit the rise of the meridian mark, visible through the holes in the supports of the southern collimator. This mark, being at a distance of rather less than 300 feet, will be observed through a lens of long focus, suitably mounted. Early in January, Dr. L. Becker was appointed Professor of Astronomy in Glasgow, but he has kindly volunteered to devote a part of his vacation to rebuilding the meridian instrument with which he has so successfully observed for a considerable part of the last eight years.

At Calton Hill the work has been continued much the same as in former years, a large part of the time of the first assistant, Mr. T. Heath, having been devoted to the reduction of the observations taken at 55 stations of the Scottish Meteorological Society. From the end of April 1893, however, in accordance with an authorization given by the Lords Commissioners of Her Majesty's Treasury, the preparation of these reports will be undertaken by the Scottish Meteorological Society. Under this arrangement the sum of 100*l.* per annum granted by the Treasury for these reductions will in future be paid to the above-mentioned Society. The change thus made will have the double advantage of freeing this Observatory from an onerous piece of non-astronomical work,—Mr. Heath being now in a position to devote all his energies to purely astronomical work,—and of placing the preparation of the schedules under the care of Dr. Buchan, who, as secretary of the Scottish Meteorological Society, is in direct personal communication with each and all of the observers. The day-time service of the Observatory has been efficiently maintained altogether by Mr. Heath, except during his vacation. The time-gun at Edinburgh Castle, the time-ball on Nelson's Monument, and the various sympathetic clocks in the city and at Dundee, have in no instance failed through any cause under the control of the Observatory. Considerable progress has been made in the comparison of the Edinburgh star places with the catalogue of the *Astronomische Gesellschaft*, commenced last year by Mr. Heath, who has also undertaken a final determination of the latitude with the mural circle.

CAMBRIDGE UNIVERSITY OBSERVATORY.—The Report of this observatory records the substantial completion of the observation of the zone, undertaken in connexion with the "Astronomische Gesellschaft," and the reductions are in a forward state. The Syndicate of the Observatory recommend that the transit circle, now set free for other work, be employed according to a recommendation made by Dr. Gill in making observations of certain stars simultaneously with the Cape Observatory for the better study of the effects of refraction.

The Newall telescope has been devoted to spectroscopy during the year, some 80 photographs of stellar spectra having been obtained, of which 16 were of use for measurement. The scale of the spectra with a single prism gave 2 inches between F and H; with both prisms H γ to H occupied $1\frac{3}{4}$ inches. Work had been much interfered with from the necessity of placing the driving clock under thorough repair. The fifth satellite of Jupiter had been observed on January 24 and February 8, "as a very difficult object."

The Syndicate of the Observatory propose that the Northumberland telescope be joined to a new photographic telescope of 18 inches aperture, and of the same focal length as the Northumberland, the two to form a twin telescope, like those of the Photographic Survey, and to be placed on a new mounting and under a new dome. The telescope would be used for the photographic determination of stellar parallax.

YALE COLLEGE OBSERVATORY.—Notice has already been drawn to the triangulation of stars in the vicinity of the North Pole by the heliometrical of Dr. Elkin. In his report to the Board of Managers of Yale College Observatory on June 26, 1893, he refers to the measures of 51 stars of large proper motion. Three sets of measures were made at each parallax maximum. The results for large parallaxes are not yet published, as the reductions are not completed. Dr. Elkin has also continued the series of parallax measures on the first magnitude stars — Aldebaran, Procyon, Regulus, Arcturus, and Vega. Dr. Chase has commenced a series of observations of β Cygni to test the parallax of Mr. Harold Jacoby, deduced from the Rutherford photographic plates.

SMITHSONIAN OBSERVATORY.—Prof. S. P. Langley, the Secretary of the Smithsonian Institution, refers in the Smithsonian Report for 1892 to an important project in a proposed work on the moon, which shall consist of a "series of photographic representations of hitherto unequalled size and definition, which shall represent the moon's surface as far as possible on a definite scale, and *entirely* without the aid of a draughtsman." The observatory is still located in a temporary wooden shelter in the grounds, awaiting provision of a site by the Congress. It is proposed in the future to explore the infra-red region of the spectrum by the method lately improved by Prof. Langley himself, when the instruments have been established in their permanent quarters.

THE VATICAN OBSERVATORY.—An important paper appears in the Publications of this observatory, by the photographic assistant of the observatory, Sr. F. Mannucci, in the meteorological section of the publications. He classifies the clouds after Messrs. Abercromby and Hildebransson's method into three different periods, which are divided into five principal groups, according to the heights at which the various forms are ordinarily found. The paper is illustrated by 14 photographs taken at the observatory.

THE BEDROOM OF POPE LEO XIII.—A curious room is in course of preparation for Pope Leo XIII. in the tower of Leo IV. The ceiling of the room is dome-like in shape, and ornamented with stars and constellations—the astronomers of the Vatican having supplied the exact places—to represent as nearly as possible the heavens. The artist, Steitz, has painted most wonderfully the stars in silver on a clear blue moonless vault; but in the constellation of *Leo*, the stars conceal minute electric lamps, which on the entrance of the Pope will light up, by turning a button, the constellation that bears his name."

THE FIRST ASTRONOMER ROYAL.—Some months ago Mr. William Tebb, of Rede Hall, Burstow, Surrey, called attention to the fact that Flamsteed, the first Astronomer Royal, had no monument to his memory, neither at his birthplace, nor at Greenwich, nor at Burstow, of which parish he was rector for 35 years. This is the more remarkable as his wife, Mrs. Margaret Flamsteed, left a sum of money for the express purpose of providing a monument to him. In consequence of Mr. Tebb's suggestion a committee has been appointed by the Royal Astronomical Society to receive subscriptions, and to decide on the form which the memorial should take. The general feeling at the Annual Meeting of the Royal Astronomical Society was that a medallion portrait, or bust, with a suitable inscription would be the best form.

In the meantime Mr. Tustin, a resident at Burstow, has at his sole expense, beautified the little church at Burstow by supplying a stained glass window at the east end of the church, with an inscription to Flamsteed's memory. The window represents the Adoration of the Magi, the star shining above the centre of the group. This gift is, however, quite apart from the general project of the Flamsteed Memorial, and it is to be hoped that the example of this private generosity will lead to prompt and earnest action that one who did so much for our science, and who met with such poor recognition in his own time, may at length be provided with some appropriate memorial.

THE LATE R. A. PROCTOR.—It will be remembered that this gifted writer died far from his home and friends under very painful circumstances. Travelling from his home in Florida, he was found, when he arrived at New York, to be suffering from what was believed to be yellow fever. The dread of contagion was so keen at the time that the sufferer received little attention, and on his death was buried in the undertaker's private lot at Greenwood, without even a stone to mark the place. Unfortunately, successful as he had been as writer and lecturer, Mr. Proctor had not been able to leave any provision for his family, and his children, though desirous to give their father a suitable monument, have hitherto

not been able to do so. Mr. George W. Childs, of Philadelphia, has recently taken up the question, and has purchased a grave in Greenwood, near the Flatbush entrance, to which the astronomer's remains will be removed, and it is hoped that a suitable granite monument will be erected shortly.

NEW MINOR PLANETS.—The following new minor planets have been discovered :—

Number.	Discoverer.	Place.	Date.	Magnitude.
1893, AC	Charlois -	Nice - -	July 14 -	12
AD	Charlois -	Nice - -	July 16 -	11
AE	Borrelly -	Marseilles -	July 5 -	12

COMET *b* 1893 (RORDAME-QUÉNISSET).—This comet was discovered on July 9 independently by M. Quénnisset, a student at M. Flammarion's Observatory, Juvisy, by Mr. Rordame, of Utah, U.S.A., and by Mr. Herbert Filmer, of Faversham, Kent. Two days later it was observed at South Kensington, by Mr. Shackleton, before the notice of these discoveries had been received. Clouds, however, prevented its identification as a new object, and further observations could not be made until July 16. On July 17, Mr. Shackleton observed a faint tail extending towards the southern side of the axis. Spectroscopic observations were very difficult, but three bright bands—probably due to carbon—were recognised. There was also a feeble continuous spectrum.

The comet was photographed at the Royal Observatory, Greenwich, on July 17, 21, and 22. The comet, though low down in the sky, and though occasionally obscured by cloud, was bright enough to give a very distinct image in seven minutes' exposure.

The following elements and ephemeris for the comet are given by Herr Lamp :—

$$\begin{aligned}
 T &= 1893, \text{ July } 7^{\circ} 3140, \text{ M.Z. Berlin.} \\
 \omega &= 47^{\circ} 6' \cdot 72 \\
 \Omega &= 337^{\circ} 20' \cdot 93 \\
 i &= 160^{\circ} 1' \cdot 88
 \end{aligned}
 \left. \vphantom{\begin{aligned} \omega \\ \Omega \\ i \end{aligned}} \right\} 1893 \cdot 0.$$

$$\log q = 9 \cdot 82948.$$

1893.	R.A.	Decl.	Log <i>r</i> .	Log Δ .	Brightness.
July 31	^h 11 ^m 59 ^s 24	[°] 16 ['] 12 ^s 8 N	9 [·] 9232	0 [·] 0439	0 [·] 09
Aug. 4	12 5 ^s 18	14 6 ^s 2 N	9 [·] 9478	0 [·] 0986	0 [·] 06

The ephemeris is for Berlin midnight. The brightness on July 8 is taken as unity. The comet is getting rapidly fainter.

THE REFRACTIVE INDEX OF THE ATMOSPHERE.—In a communication to the Berlin Academy, MM. Keyser and Runge have shown a means to obtaining the refractive index of the atmosphere for the ultra-visible portion of the spectrum. Between the sensitive plate and Rowland's concave grating a prism is introduced which displaces the spectrum on the plate. From this the angle of deflection of the rays and the index of the prism is deduced, knowing the distance between the plate and the prism. The prism that they used was of copper closed with quartz plates, and hollow, containing air at a pressure of 10 atmospheres. Since the index of deviation for gases varies with the density the refractive indices for air at zero and atmospheric pressure can be calculated.

MEASURES OF THE DIAMETERS OF MARS.—Dr. W. W. Campbell has published the following measures of the polar and equatoreal diameters made with the 36-inch refractor of the Lick Observatory during the late opposition :—

Date.	Hour.	Polar Diameter.	Equatoreal Diameter.
	h m	"	"
20 July 1892	15 2	24' 36	24' 62
24 " "	12 8	24' 79	24' 95
27 " "	12 5	25' 10	25' 36
30 " "	13 3	25' 37	25' 21
31 " "	13 4	25' 22	25' 34
7 August 1892	10 4	25' 52	25' 52
7 " "	14 8	25' 59	25' 70
15 " "	13 8	—	24' 74
16 " "	12 4	25' 18	24' 77
17 " "	13 2	24' 97	24' 98

Mr. George Comstock has also published similar measures made at the Washburn Observatory.

		"	"
5 August	- -	25' 19	26' 06
7 " "	- -	25' 36	25' 80
6 " "	- -	25' 67	26' 25

It will be noticed that the polar flattening is very slight; indeed the measures of the equatoreal diameter sometimes exceed those of the polar. This may be due to some systematic error depending on the angle of position of the distance measured. All the values are smaller than those given by Le Verrier, and used by the English and French Nautical Almanacs, and by the "Comnaissance des Temps."

THE SOUTH POLAR CAP OF MARS.—Dr. Asaph Hall has obtained a series of measures with the great equatoreal of the Washington Observatory of the diameter of the south polar cap of Mars, during the recent opposition.

Date.	Areocentric Angle.
14 July 1892 - -	$46^{\circ}5 = 1709$ miles.
12 August 1892 - -	$25^{\circ}8 = 948$ „
16 September 1892 - -	$20^{\circ}9 = 768$ „

Mr. Comstock has also obtained the following measures :—

Date.	Diameter.	Distance of Centre from Pole.	Longitude.
26 July - - -	44°	$0^{\circ}47$	341°
18 August - - -	35°	$2^{\circ}95$	11°
19 September - - -	22°	$2^{\circ}95$	36°

Dr. Hall remarks that when the cap had become much reduced in size, it presented the appearance of a depression on the surface. The following is a table of the distances of the centre of the polar cap from the geographical pole :—

	$^{\circ}$	$'$
Herschel - - -	1783	8 8
Bessel - - -	1830	6 36
Beer and Madler - - -	1837	8 0
Secchi - - -	1858	17 42
Linsser - - -	1862	20 0
Kaiser - - -	1862	4 16
Hall - - -	1877	5 11
Schiaparelli - - -	1877	6 9
Hall - - -	1892	2 45
Comstock - - -	1892	2 95

THE TOTAL SOLAR ECLIPSE OF 1896, AUGUST 8.—With a view to supplying useful information in ample time Dr. Downing has published in the “Nautical Almanac Circular,” No. 15, local particulars for the above-named eclipse. The little pamphlet contains two clear outline maps, the one of the track of the eclipse from 5° to 60° E. long., the other from 138° to 145° E. long. Two stations, viz., Vadsö, on the Varanger Fiord, Finmark (near the North Cape), and a point on the west coast of Goose Land, Novaya Zemlya, are selected in the first section; and three, viz., the River Amur, the coast of the Maritime Province, Siberia, and the N.E. coast of the Island of Yezo, Japan, in the second section. Particulars of the time and duration of the eclipse, and of the elevation of the sun, are given for each of the five stations, together with equations for computing the times of beginning and ending for places in their vicinity. Vadsö and Novaya Zemlya could be reached from England in a very short time, and should attract a large number of amateur astronomers.

PHOTOGRAPHY IN COLOURS.—M. Lippemann published some time ago his investigations on the subject of photography in colours. His methods required, however, too long an exposure of an hour and a half or two hours to register a portrait or landscape on the sensitive plate, the films also were extremely difficult to preserve after exposure. Latterly M. Louis Lumière has turned his attention to similar experiments, and has succeeded in curtailing the time of exposure to half-an-hour by using specially prepared bromide-gelatine plates. The methods of preparation used by MM. Auguste and Louis Lumière are briefly as follows: when a solution of the hydrate of peroxide of cobalt is made with oxalic acid, a very unstable solution of cobaltic oxalate is obtained, which, on the addition of organic matter, is rapidly reduced by the influence of light. Sensitised gelatine paper dipped in this cobaltic solution is rendered of a green colour by the sensitising liquid, and the green colour becomes red by the action of light through the formation of a cobaltous salt. When developed with ferricyanide of potassium the cobaltous salts are precipitated as a cobaltous cyanide, which is speedily converted into an oxide of cobalt by the addition of an alkali, into sulphur ley, an alkali of sulphur, or into some other ferricyanide by the addition of salts of iron, nickel, &c.

Another method is to precipitate the cobaltous salt by peroxide of sodium. The cobaltic hydrate which is formed is washed with warm water, concentrated, and treated when cold with a saturated solution of oxalic acid. The reaction which takes place in presence of an excess of cobaltic hydrate is complete in a few hours, and gives a green solution which, used for sensitising gelatine papers, after exposure the paper is developed by a solution of ferricyanide of potassium, 5 in 100, and well washed. By treating with a ferrous or nickel salt, blue and red images are respectively obtained.

Notices of the Association.

The Meetings of the Association will no longer be held in Barnard's Inn, Holborn, but arrangements are being made for their taking place in one of the Lecture Theatres of University College, Gower Street. Further particulars will be announced in due course.

It is requested, in consequence of this change in the place of meeting, that all communications, books, and presents, be addressed in future to the care of the Assistant Secretary, Mr. T. F. Maunder, 26, Martin's Lane, Cannon Street, E.C., and not to Barnard's Inn.

Mr. John Bagster, F.C.A., and Mr. Edwin Dunkin, F.R.S., were appointed Auditors to the Association for the ensuing year at the Meeting held on June 28, 1893.
